SSC Communication Board V3.3 Application Note -Installation of the USB Drivers

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1 Content and Basics

This application note provides a step-by-step example for USB driver installation for IDT's SSC Communication Board (CB) using the latest USB driver from the IDT website or SSC Evaluation Software DVD and a Win7 64-bit Operating System (OS) or WinXP OS. Instructions are also included for creating a virtual COM port on the user's USB port by installing the second part of the USBdriver. Both these drivers are needed when using the CB.

Since Microsoft Windows[®] Vista and Microsoft Windows[®] Server 2008, the kernel at the core of the OS has been improved by some substantial enhancements.¹ One of the improvements in the kernel is the option to install hardware in the OS. Therefore a certification process must be completed. Because the USB device identification of the SSC Communication Board is not certified by Microsoft[®], a change of the Product ID (PID) can be used to suppress error messages during the installation process and use FTDI's certified driver. This is needed if the security requirements of the user's IT department do not allow using non-WHQL-certified drivers.

For USB communication, the CB uses an integrated circuit from FTDI. The second part of the procedure in this application note describes how to reprogram IDT's CB's PID 0xDD10 to FTDI's default PID 0x6001 in order to use the approved FTDI driver.²

To detect which kind of PID the CB uses, the Windows[®] Device Manager can be used. The following steps are recommended.³

- Open the Device Manager tool on the user's PC.
- Select the SSC CB. Note: The location for the CB ("ZMDI SSC Evaluation Kit") depends on successful installation of the driver (either "Other devices" or "Ports (COM & LPT)").
- Right-click on "ZMDI SSC Evaluation Kit" → select "Properties."
- Go to the "Details" tab and select "Hardware Ids" in the "Property" pull-down menu.

Figure 1.1 Product ID for SSC Communication Board V3.3 using IDT's Default Product ID



¹ Please refer to articles on the Microsoft TM website for further information (<u>http://www.microsoft.com/whdc/system/vista/kernel-en.mspx</u>).

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² Note: The procedures for changing the PID require Microsoft .NET Framework 2.0 (see section 4.1).

³ These steps are related to Win 7 OS. With other operating systems, these steps might vary.

2 USB Driver Installation for a WIN7 Operating Systems

This section describes the procedure for USB driver installation using IDT's USB driver from IDT's website or the SSC Evaluation Software DVD and an example PC system with 64–bit WIN7 OS as shown in Figure 2.1. The installation procedure for a 32–bit WIN7 OS is identical. Before starting the installation procedure, check IDT's website for the latest USB driver version.¹

Important: System administrator rights are required to install the USB driver on your PC!

Figure 2.1 Hardware and Software Used for USB Driver Installation

Control Panel Home	View basic information	n about your computer	
🚱 Device Manager	Windows edition		
🚱 Remote settings	Windows 7 Ultimate		0
🚱 System protection		oft Corporation. All rights reserved.	
Advanced system settings			
	System		
	Rating:	4,4 Windows Experience Index	
	Processor:	AMD Phenom(tm) II X3 B75 Processor 3.00 GHz	
	Installed memory (RAM):		
	System type:	64-bit Operating System	
	Pen and Touch:	No Pen or Touch Input is available for this Display	
	Computer name, domain, and	d workgroup settings	
	Computer name:	t-PC	🚱 Change setting
	Full computer name:	t-PC	
	Computer description:		
	Workgroup:	WORKGROUP	
	Windows activation		
	Windows is activated		ask for , a
	Product ID: XXXXX-OEM-X	000000X-0000X Change product key	genuine Microsoft software
See also			software Learn more onlin
Action Center			Learn more onlin
Windows Update			
Performance Information and Tools			

2.1. Installing the Basic USB Driver

Use the following steps to install the USB driver:

- Step 1: Close all programs currently running and disconnect all FTDI parts connected via USB.
- Step 2: Connect the CB using the USB cable included with the IDT Evaluation Kit.

Figure 2.2 "New Hardware Found" Message



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Step 3: Because IDT's USB driver is not WHQL-certified, Windows will not be able to detect the device automatically.





Step 4: Open the "Control Panel" menu.

Figure 2.4 Control Panel

Paint	٠	
5 Sticky Notes	•	
Getting Started	•	Documents
Calculator		Pictures
Snipping Tool		Music
Remote Desktop Connection		Games
Magnifier		Computer
Notepad		Control Panel
VMware Player		Devices an Change settings and customize the functionality of your computer.
		Default Programs
All Programs		Help and Support
Search programs and files	Q	Shut down 🔸

Step 5: Open the "Hardware and Sound" menu.

Figure 2.5 "Hardware and Sound" Menu



Step 6: Open the "Device Manager" menu.

Figure 2.6 Device Manager



Step 7: Open "Other devices," which will include the "ZMDI SSC Evaluation Kit." Right-click on "ZMDI SSC Evaluation Kit" to open the context menu and select "Update Driver Software."

Figure 2.7 "Update Driver Software"

Device Manager
File Action View Help
Image: PC Image: PC

Step 8: Select "Browse my computer for driver software" in the next menu.

Figure 2.8 Search for Driver

How do you want to search for drive	er software?	
Search automatically for update Windows will search your computer and for your device, unless you've disabled th settings.	the Internet for the latest driver software	
Browse my computer for driver Locate and install driver software manual		

Step 9: Select the location where IDT's driver has been stored, browsing as needed to select either the DVD drive or the directory where the USB driver from IDT's website was stored. When the correct driver is selected, click "Next."

Figure 2.9 Browse for IDT's USB Driver

Browse for driver so	ftware on your computer		
Search for driver software i FAFTDL64_BittyCDM20802 Include subfolders	service and	Browse	
This list will show in	n a list of device drivers or stalled driver software compatible t category as the device.		

Step 10: Because IDT's USB driver is not WHQL-certified, a Windows[®] security message will occur. Select "Install this driver software anyway," and the driver installation process will move on.



Figure 2.10 Windows[®] Security Message

Step 11: The first part of the driver installation has been successfully completed if the message shown in Figure 2.11 appears. The next steps explain the steps for installation of the virtual COM port that is used for communication. This window can be closed.

Figure 2.11 Successful Hardware Installation

Update Driver Software - ZMDI SSC Evaluation Kit
Windows has successfully updated your driver software
Windows has finished installing the driver software for this device:
ZMDI SSC Evaluation Kit
Close

2.2. Installing the Virtual Com Port USB Driver

The following steps are needed to install the second part of the USB driver that will establish communication between the PC and the CB using the virtual COM port. The USB driver will causes the USB device to appear to the system as a virtual COM port. The steps are similar to them under Installing the Basic USB Driver.

- Use the following steps to install the USB driver:
 - Step 1: The following steps are needed to establish communication between the PC and the CB using the virtual COM port. The Device Manager will have changed because the "ZMDI SSC Evaluation Kit" will now be listed under "Universal Serial Bus." Under "Other devices," locate "USB Serial Port."

Right-click on "USB Serial Port" and open the "Update Driver Software" menu.

Sound, video and Scan for hardware changes		
Universal Standard Enh Standard Enh Standard Chinanced PCI to USB Host Controller Standard OpenHCD USB Host Controller Standard DenHCD USB Host Controller Standard OpenHCD USB Host Controller Standard DenHCD USB Host Hub Star Standard Hub Star Standard Hub Star Star Star Star Star Star Star S]	

Figure 2.12 "Update Driver Software"

Step 2: Select "Browse my computer for driver software" in the next menu.





Step 3: Because this part of IDT's USB driver is also not WHQL-certified, a Windows[®] security message will occur again. Select "Install this driver software anyway," and the driver installation process will move on.





Step 4: The second part of the USB driver installation has been successfully completed if the message shown in Figure 2.15 appears. This window can be closed.

Figure 2.15 Successful Hardware Installation

Update Driver Software - ZMDI SSC Evaluation Kit (COM6)
Windows has successfully updated your driver software
Windows has finished installing the driver software for this device:
ZMDI SSC Evaluation Kit
Close

2.3. **Checking USB Port Operation**

The Device Manager will have changed again because both drivers are successfully installed. The Device Manager can be used to detect the number of the virtual COM port used for communication between the PC and SSC CB.



Figure 2.16 Contents of the Device Manager after Successful Installation

The successful installation of both IDT's and FTDI's default USB driver is necessary to run any IDT SSC Evaluation Software or establish communication with the CB. Using a virtual COM port from 1 to 8 is recommended because it is guaranteed that all IDT software will be able to detect the CB in this range.

3 USB Driver Installation for a WIN XP Operating Systems

This section describes the procedure for USB driver installation using IDT's USB driver from IDT's website or the SSC Evaluation Software DVD and a PC system with WIN XP OS. Before starting the installation procedure, check IDT's website for the latest USB driver version.¹

Important: System administrator rights are required to install the USB driver on your PC!

3.1. Installing the Basic USB Driver

Use the following steps to install the USB driver:

- Step 1: Close all programs currently running and disconnect all FTDI parts connected via USB.
- Step 2: The "Found New Hardware" wizard launches and brings up the following dialog box. Select "No, not this time," and click "Next."





Step 3: Select "Install from a list or specific location (Advanced)." Click "Next."

Figure 3.2 Select USB Driver

What do you want the wizard to do? Install the software automatically (Recommended) Install the software automaticall (Re	Found New Hardware Wiz	ard This wizard helps you install software for: USB <→ Serial
 Install from a list or specific location (Advanced) 		If your hardware came with an installation CD or floppy disk, insert it now.
		Install the software automatically (Recommended) Install from a list or specific location (Advanced)

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Step 4: Select "Search removable media (floppy, CD-ROM)," and click "Next."

Figure 3.3 Search for USB Driver

 Search for the best driver in these locations. Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed. Search removable media (floppy, CD-ROM) Include this location in the search: Browse Don't search. I will choose the driver to install. Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware. 	Found New Hardware Wizard Please choose your search and installation options.
	Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.

Step 5: When the warning about failing logo testing appears, click "Continue Anyway" because this concern is not applicable.

Figure 3.4 Windows[®] XP – Logo Test



Step 6: Finish the driver installation by clicking "Finish."

Figure 3.5 Successful Hardware Installation

Completing the Found New Hardware Wizard The wizard has finished installing the software for: USB High Speed Serial Converter
Click Finish to close the wizard.

3.2. Installing the Virtual Com Port USB Driver

The second required USB driver causes the USB device to appear to the system as a virtual COM port. Follow the same steps as outlined under Installing the Basic USB Driver above to complete this second driver installation.

3.3. Checking USB Port Operation

Figure 3.6 Successful Hardware Installation



4 Changing the Product ID of the SSC Communication Board V3.3

This section describes the procedure for changing the Product ID (PID) of the CB. This is only needed if the message shown in Figure 2.10 and Figure 2.14 should be prevented and the default FTDI driver should be used. This can be the case if the security requirements of the user's IT department do not allow using non-WHQL-certified drivers.

4.1. FT_Prog Tool for Changing the PID

FT_PROG, a tool from FTDI, can be used to change the PID of the CB. Version 1.10 of this tool can be downloaded from FTDI's website ¹ or found on the DVD of IDT's SSC Evaluation Kit or Mass Calibration System. This tool does not require an installation process, and it is only necessary to unzip the file.

- **Note:** Reprogramming the PID requires an installed USB driver. Otherwise the FT_PROG tool is not able to detect the SSC CB!
- Note: FT_PROG requires Microsoft .NET Framework 2.0 installed on the user's system.²

Figure 4.1 Location of FT_Prog_v1.10.zip on the SSC Evaluation Software DVD



¹ <u>http://www.ftdichip.com/Support/Utilities.htm</u> (Use the search function of the browser and look for FT_PROG.)

Microsoft .NET Framework 2.0 can be downloaded from the Microsoft website:

http://www.microsoft.com/downloads/details.aspx?FamilyID=0856EACB-4362-4B0D-8EDD-AAB15C5E04F5&displaylang=en

4.2. Procedure for Changing the PID

Use the following steps for reprogramming the PID. (Screenshots were recorded with Windows XP 32 bit.)

- Step 1: Unzip *FT_Prog_v1.10.zip* from the SSC Evaluation Kit or Mass Calibration System DVD (or the file from FTDI's website).
- Step 2: Disconnect the CB (and all other USB devices) from the PC.
- Step 3: Start FT_PROG.exe.¹

Figure 4.2 Main Window of FT_PROG Revision 1.10

File Devices Help			
Device Tree	Property	Value	
		Value	
	Information Box		
	Device Output		

- Step 4: Connect the CB and PC via the USB cable included with the IDT Evaluation Kit.
- Step 5: Find the connected CB by clicking the "Scan and Parse" button (magnifying glass icon), which should be marked with a red outline.

¹ It can happen that the main window of the program does not show up very quickly. Please check the Task Manager before starting the program multiple times!

FTDI - FT Prog		💶 🗆 🚺
EEPROM W Rash ROM		
File Devices Help		
		0
Device Tree Scan and Parse Property	Value	

Figure 4.3 Searching for the Connected SSC Communication Board

- Step 6: Extend "USB Device Descriptor" and select "VID PID."
 - **Note:** If the user's device uses "FTDI default" as the value for "Custom VID PID," it is not necessary to change settings at the FTDI device and the SSC is ready to use FTDI's certified USB driver.¹

Figure 4.4 SSC Communication Board with IDT Product ID Detected

File Devices Help		
D 😂 🛃 🖻 • 👂 🥖 🔤		
Device Tree	Property	Value
Contraction Contr	Custom VID/PID:	Custom PID
	Vendor ID: Product ID: USB Version Number:	0403 DD10 USB 2.0 v
USB String Descriptors	Information Box	
≟ 🔿 Hardware Specific	Changing to a custom	and product ID of the chip. VID and/or PID will require the .inf be changed in order to install the

Step 7: Change the value for "Custom VID/PID" to "FTDI default." The input boxes for "Vendor ID" and "Product ID" are disabled.

Figure 4.5	Changes Required for 64-Bit OS
------------	--------------------------------

Device Tree	Property	Value
Cevice: 0 [Loc ID: 42]	Custom VID/PID:	FTDI Default
Chip Details	Vendor ID:	0403
USB Device Descriptor	Product ID:	6001
⇒ idVendor	USB Version Number:	USB 2.0 🗸

Step 8: Click on the "Program Devices" button to open the programming menu.

Since no settings need to be changed, the program can be closed without any change on FTDI's device.

Figure 4.6	"Program Devices" Button			
			6	D
	Device Tree Program Devices	Property	Value	
		Custom VID/PID: Vendor ID:	FTDI Default	

Step 9: Start the programming procedure by clicking on the "Program" button.

Figure 4.7 Start Programming Procedure

Device List	Device Overview
Device: 0 [Loc ID: 42]	Device: 0 [Loc ID: 42]
	Chip Type: 'FT232R'
	Vendor ID: 0x0403
	Product ID: 0x6001
	Manufacturer: 'ZMDI'
	Product Description: ZMDI SSC Evaluation Kit
	Serial Number: 00TL8O0B Auto-Generate
Select All Deselect All	Only Program Blank Devices
Cycle Ports	Program Erase Close

Step 10: Reprogramming is complete when "Finished Programming" appears.

Figure 4.8 Programming Finished

	Program Erase Close
Finished Programming	

Now the SSC Communication Board V3.3 is ready to use the original WHQL-certified USB driver from FTDI and FT_Prog can be closed. Disconnect and then reconnect the CB to the PC so that Windows[®] will use the new PID.

5 Related Documents

Document
SSC Communication Board Datasheet

Visit IDT's website <u>http://www.idt.com/SSC-COMM-BD</u> or contact your nearest sales office for the latest version of these documents.

6 Glossary

Term	Description
СВ	Communication Board
OS	Operating System
PID	Product ID
SSC	Sensor Signal Conditioner
VID	Vendor ID
WHQL	Microsoft's Windows Hardware Quality Labs

7 Document Revision History

Revision	Date	Description
1.00	November 18, 2010	First release of document.
1.01	November 25, 2010	Add section "USB Driver Installation" Remove all hints related to 64bit OS in "PID description" rename AN to "Installation of USB driver" because the AN describes complete characteristics of ZMDI's USB driver (previous name: "Change PID")
1.02	June 8, 2011	Revision of company name references from ZMD to ZMDI. Minor edits. Add section "USB Driver Installation for a WIN XP Operating Systems"
	April 20, 2016	Changed to IDT branding.



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